Remarks

Applicant has carefully considered the Office Action mailed on December 03, 2003. Of the pending claims, the Examiner rejected claims 1-5,7,8 and 10-12, but indicated that claims 6 and 9 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 1-12 remain pending in the present patent application. In view of the following remarks, Applicant requests further examination and reconsideration of the present patent application.

The Examiner rejected claims 1-3,7,8 and 12 under 35 USC 103(a) as being unpatentable over Kadono et al, (hereinafter Kadono) US patent 6,088,485, in view of Itagaki et al., (hereinafter Itagaki) US patent 5,928,146. Claim 4 was rejected under 35 USC 103(a) as being unpatentable over Kadono in view of Nevo, US patent 6,594, 517. Claim 5 was rejected under 35 USC 103(a) as being unpatentable over Kadono in view of Foo, US patent 6,611,701. Claims 10 and 11 were rejected under 35 USC 103(a) as being unpatentable over Kadono in view of Cline et al. (hereinafter Cline) US patent 6,281,681.

Applicant respectfully traverses the rejection of claims 1-3,7,8 and 12 under 35 USC 103(a) over Kadono in view of Itagaki. It is respectfully submitted that the Applicant's invention as recited in independent claim 1 and claims depending therefrom, is not obvious in view of the applied references, taken individually or in combination. Applicant further submits that the applied references fail to teach or suggest means for acquiring a plurality of free-breathing data sets of a region of interest and selectively processing the plurality of free-breathing data sets in comparison with a reference data set for use in generating an image of a region of interest, as described by Applicant's invention recited in the independent claim 1.

Applicant respectfully submits that the applied references do not teach, suggest, or disclose (either individually or collectively) the independent claim 1 recitation of

"acquiring a plurality of free-breathing data sets of said region of interest and selectively processing said plurality of free-breathing data sets in comparison with said reference data set for use in generating an image of a region of interest."

Kadono discloses an image coding method for coding the pixel value signal and the shape signal referring to a reference image. The image coding method of Kadono, improves the coding efficiency for both the pixel value signal and the shape signal. Kadono does not disclose means for acquiring a plurality of free-breathing data sets of a region of interest and selectively processing the plurality of free-breathing data sets in comparison with a reference data set for use in generating an image of a region of interest.

Further there is no motivation in Kadono to combine it with Itagaki. Itagaki discloses an inspection method and apparatus using nuclear magnetic resonance for measuring a nuclear magnetic resonance signal from hydrogen, phosphorus or the like in a subject to be inspected. Further, the Itagaki invention relates to a body motion correcting method of correcting positional deviation of the brain caused by physiological factors such as respiration and cardiac pulsation with high accuracy. Itagaki does not disclose means for acquiring a plurality of free-breathing data sets of a region of interest and selectively processing the plurality of free-breathing data sets in comparison with a reference data set for use in generating an image of a region of interest. Itagaki in page 6, lines 34-38, merely states that the body motion reference data is acquired synchronously with respiration of the target to be inspected, or in a state where the target to be inspected stops, holds his/her breath, or synchronously with electrocardiogram of the target to be inspected. It does not teach or suggest using a reference data set of a breath held data set of an MRI system to be used for multi slice imaging. Therefore, Itagaki (either alone or in combination with Kadono) does not disclose, teach or suggest disclose means for acquiring a plurality of free-breathing data sets of a region of interest and selectively processing the plurality of free-breathing data sets in comparison with a reference data set for use in generating an image of a region of interest.

Obviousness cannot be established absent a teaching or suggestion in the prior art to produce the claimed invention. For a prima facie case of obviousness, the Examiner must set forth the differences in the claim over the applied references, set forth the proposed modification of the references, which would be necessary to arrive at the claimed subject matter, and explain why the proposed modification would be obvious. It is well-established law that the mere fact that references may be combined or modified does not render the resultant modification or combination obvious unless the prior art suggests the desirability of the modification or combination. As stated above, nowhere do the applied references teach, suggest or disclose means for acquiring a plurality of free-breathing data sets of a region of interest and selectively processing the plurality of free-breathing data sets in comparison with a reference data set for use in generating an image of a region of interest. By providing means for acquiring a plurality of free-breathing data sets of a region of interest and selectively processing the plurality of free-breathing data sets in comparison with a reference data set for use in generating an image of a region of interest, the Applicant's invention generates high resolution images without extended breath-holding by a patient.
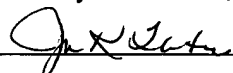
Applicant interprets the Office Action as stating that the proposed modification is to use the system of Kadono with the modifications taught by Itagaki because the MRI system is non invasive and the breath held reference data set reduces the influence of body motion. However, Applicant respectfully submits that nowhere do the applied references address the need for a robust free-breathing technique for coronary MRI which directly monitors the position of the vessels without extended breath-holding, and which produces high-resolution images. Further the applied references merely disclose an image coding method for improving coding efficiency and a method and apparatus for measuring a nuclear magnetic resonance signal from hydrogen, phosphorus or the like in a subject to be inspected. Thus, Applicant submits that the Examiner has failed to provide a basis in the art for combining the applied references that would support a prima facie case of obviousness. Accordingly, Applicant respectfully submits that the claimed invention as recited in independent claim 1, defines allowable subject matter over the applied art. Withdrawal of the rejections is respectfully requested, and allowance of claims 1-3, 7,8 and 12 is respectfully solicited.

Claims 4, 5, 10 and 11 depend directly or indirectly from independent claim 1. Accordingly, Applicant respectfully submits that claims 4, 5, 10 and 11 are patentably distinct from the applied references of Nevo, Foo and Cline for the reasons discussed above and are therefore allowable over the applied references. In addition, nowhere do the applied references of Nevo, Foo and Cline overcome the deficiencies of Kadono in view of Itagaki. Nevo relates to a method and apparatus for generating a controlled torque of a desired direction and magnitude in an object within a body, in order to steer the object through the body for purposes of performing minimally-invasive diagnostic or interventional procedures. Foo discloses a technique in which a fast 3D acquisition can be accomplished in a single breath-hold. Cline relates to a method and system for the acquisition of images using spiral scanning methods.

Accordingly, Applicant respectfully submits that the claimed invention, as recited in now presumably allowable claims 1-12 define allowable subject matter over the applied art. Withdrawal of the rejections is respectfully requested, and allowance of claims 1-12 is respectfully solicited.
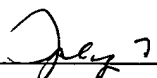
Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact Applicant's undersigned representative at the telephone number below.

Respectfully submitted,

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